Character Pipeline Overview

SDK Version 1.0

Contents

Figures

1 Introduction

The term “character pipeline” describes the data path between animation and model data sources (e.g., artists, motion capture sources) and the real-time rendering loop. At a high level, the NINTENDO GAMECUBE Character Pipeline (CP) looks like this:

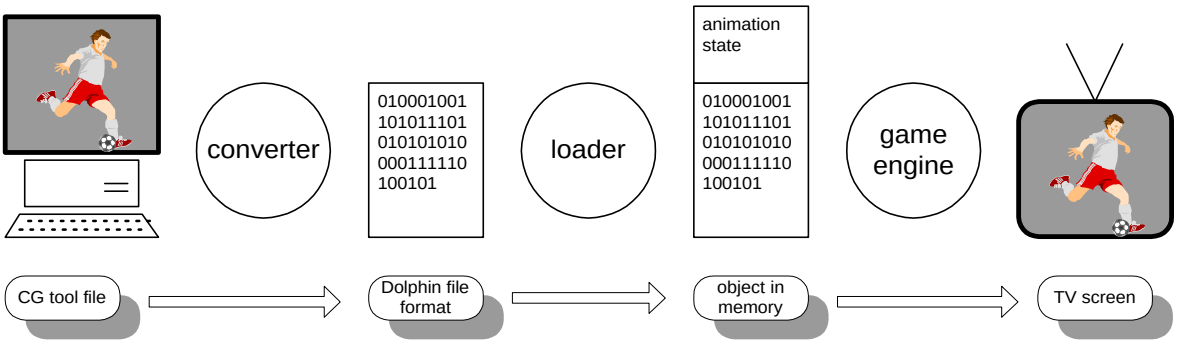

Figure 1 Character Pipeline overview

The types of data that move along this pipeline are:

- Geometry data (vertex, object).
- Texture data.
- Hierarchy data (bones).
- Animation data.
- Collision data.

1.1 Machine-specific types of data

Geometry and texture data must follow certain rules and conversion methods to ensure the highest performance and most efficient data size on hardware. The CP is most complete in this area.

1.2 Game engine-specific types of data

There are many ways to represent hierarchy and animation data. Hierarchy data is often different between skinned and non-skinned objects, while animation data often depends on what kind of controls we are animating and the key frame interpolation methods. These data types are more game engine-specific and mostly independent of hardware. The CP supplies a basic set of features in this area.

In contrast, collision data is highly game-dependent; therefore, the CP does not include any solutions for collision.

2 Document organization

At a high level, this guide contains three sections, one each for the artist, the game engine programmer, and the tool programmer, since the Character Pipeline most naturally divides into these roles in a game development team. We recommend that everyone follow the quickstart guide in "Character Pipeline for Artists."

We also provide CP release notes that detail all the modifications at each iteration of the CP SDK.

2.1 Artists

Artists will learn:

- The quickstart method to progress through our tools in the Character Pipeline (installation, export, preview).
- How to use 3D Studio MAX Release 3.1 specifically for the CPExport plug-in.
- How to use Maya 3.0 specifically for the CPExport plug-in.
- How to use converter options.

2.2 Game engine programmers

Game engine programmers will learn:

- How to use the runtime libraries on both broad and detailed levels.
- All the file formats used in the Character Pipeline.
- How to extend the runtime libraries to accommodate for more features.
- How to build the runtime libraries and demos.

2.3 CG tools programmers

Computer graphics tools programmers will learn:

- How to convert geometry, hierarchy, and animation data using the C3 library.
- How to convert texture data using the TC library.
- How to build CG plug-ins and other tools, such as the texture converter.
- The internal architecture and program flow of the C3 library in detail.